

Application No.: 10/007,502
Amendment dated: January 27, 2005
Reply to Office Action of August 27, 2004
Attorney Docket No.: 0005.1099

(b) Remarks

Claims 1-20 are pending in this application. Claims 1, 6, and 16 have been amended in various particulars as indicated hereinabove. Claims 17-20 have been added by this amendment.

Claims 1-9 and 11-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kane (4,524,127) in view of Hawkins *et al.* (5,824,236) and further in view of Yoshida *et al.* (5,500,869). This rejection is respectfully traversed for the following reasons.

Claim 1 includes the limitation of producing curved surfaces by mechanical polishing of features on a surface. Kane describes producing curved surfaces by chemical polishing of features on a surface. Examiner uses Hawking et al. col. 8, lines 18-35, to bridge this gap.

Applicant respectfully disagrees. Hawking et al. does not say anything about producing curved surfaces by any kind of polishing; they only use polishing to produce what they describe as "flat" or "planar" surfaces. In fact, Hawking et al. in some sense teach away from combination with Kane: Kane uses polishing to create curved surfaces, while Hawking et al. use polishing to remove all curvatures.

Thus, Applicant believes that the independent claims are patentably distinguishable over the combination.

Claims 2-3 and 6-7 include the limitation of forming blind holes in the substrate for subsequent polishing. In contradistinction, Kane describes forming V-shaped grooves in the substrate.

There are advantages to the claimed approach of forming blind holes. This is a relatively easy, binary etch process that can be performed by reactive ion etching, for example. In contrast, forming V-shaped grooves by anisotropic silicon etching as

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described by Kane, col. 2, line 52 – col. 3, line 11 is sometimes more difficult, and can be a sensitive timed etch process that can be difficult to monitor.

Yoshida et al. teach dicing a one dimensional array of optical elements into individual elements.

Neither Kane, Hawkins et al., nor Yoshida et al. alone or in combination teaches or suggest the Claim 1 limitation of mechanically polishing a surface with features to produce a curved surface. This limitation of Claim 1 is also present in the dependent Claims 2-9 and 11-15.

Neither Kane, Hawkins et al., nor Yoshida et al. alone or in combination teaches or suggest the Claims 2-3 and 6-7 limitation of forming blind holes in the substrate for subsequent polishing.

Claims 10 and 16 were rejected under 35 U.S.C. 102(b) as being unpatentable over Kane (4,524,127) in view of Hawkins *et al.* (5,824,236) and Yoshida *et al.* (5,500,869) and further in view of Meyers *et al.* (4,451,119). This rejection is respectfully traversed for the following reasons.

Claims 10 and 16 include the limitation of coating a curved surface of micro-optical elements with a reflective coating. Meyers et al. describe overlaying a flat polished glass surface with laser mirror coating of high reflectivity.

Neither Kane, Hawkins et al., Yoshida et al., nor Meyers et al. alone or in combination teaches or suggest the Claim 10 or Claim 16 limitation of coating a curved surface with a reflective coating, with the curved surface being formed in the claimed manner.

Further, Claims 10 and 16 include the limitation mechanically polishing a surface with features to produce a curved surface.

The arguments used above for showing non-obviousness of Claim 1, also show that neither Kane, Hawkins et al., Yoshida et al., nor Meyers et al. alone or in

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combination teaches or suggest the Claim 10 or Claim 16 limitation of mechanically polishing a surface with features or holes to produce a curved surface.

The new Claims 17-20, are directed to two-dimensional dicing and orthogonal walls of features on the surface. These limitations are not taught or suggested by the documents cited by the Examiner.

Applicant believes that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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